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ABSTRACT

Legislation from all states employing a geographical isolation factor in calculating revenue for public school districts is summarized in this paper. The inclusion of a geographical isolation factor in a state's distribution formula for state aid is a mechanism for providing additional revenue to small schools or school districts that, because of geographical location, cannot be consolidated into more efficient units. The paper is based on national surveys completed in 1980 and 1982. It was found that four states--Nebraska, New Mexico, Pennsylvania, and Texas--have enacted legislation providing for a geographical isolation factor using an isolation criterion based on density of population. Six states--Colorado, Florida, Minnesota, Montana, Oregon, and South Dakota--include an isolation criterion based on distance or travel time to another school or school district. Eight states rely on determination by a state agency to designate schools as geographically isolated. These include Alaska, Arkansas, Georgia, Idaho, Maine, North Carolina, Utah, and Washington. Finally, it was found that two states--Florida and Minnesota--also include a geographical isolation factor based on a formula. (Author/JM)

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ED224103

CURRENT LEGISLATION REGARDING THE USE OF GEOGRAPHICAL ISOLATION FACTORS IN PUBLIC SCHOOL REVENUE CALCULATIONS

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This paper provides a summary of relevant legislation from all states which currently employ a geographical isolation factor in calculating revenue for public school districts. An original survey of all fifty states was completed early in 1980. A follow-up survey was completed in June of 1982. Except as noted, the following is a review of legislation current as of June 1982.

There are seventeen states which provide for a geographical isolation factor. These states are grouped in this paper according to the type of isolation criterion used: population density, distance between schools, state determination of isolation without definite criteria or through use of a number of varied criteria, or a formula containing one or more measures of isolation.

Density

Four states--Nebraska, New Mexico, Pennsylvania, and Texas--have enacted legislation providing for a geographical isolation factor which uses an isolation criterion based upon density of population.

Nebraska. Since 1967 the Nebraska legislature has provided for a geographical isolation factor in the school foundation and equalization fund distribution.

> When the population density in any school district is less than four persons per square mile, as determined from the most recent school census, the equalization allowance shall be the following:
>
> (a) If the population density is three or more but less than four persons per square mile, ten percent;
>
> (b) If the density is two or more but less than three persons per square mile, twenty percent;
>
> (c) If the density is one or more but less than two persons per square mile, thirty percent; and
>
> (d) If the density is less than one person per square mile, forty percent;
>
> Any school district showing a density greater than provided in this subsection shall not qualify for such percentage increases (Nebraska 1976, section 79-1336).

For the 1981-82 school year, twenty-eight of Nebraska's one thousand forty-four districts had population density values of less than four persons per square mile and were funded accordingly. The total revenue distributed

in 1981-82 attributable to the "remote" classification was $62,150.79 (Pfeiffer 1982).

New Mexico. New Mexico legislation in 1976 provided for a "rural isolation factor" based upon both enrollment size and geographic area. This factor was intended to apply to only one of the state's school districts, the Gallup-McKinley County School District, which is the geographically largest school district in the country (Swift 1978). Figure 1 contains the formula used to calculate the additional program units allotted under the rural isolation factor (New Mexico 1978). In 1981-82, the Gallup district

$$\text{Units} = 4{,}000 - \frac{\text{ADM}}{\text{Senior high schools}} \times 0.50$$

ADM = Total district average daily membership

Senior high schools = Number of approved regular senior high schools in the district

Fig. 1. Calculation of additional program units allowed by the New Mexico rural/isolation factor.

received 608.625 additional program units, valued at $1,405 each, because of the rural/isolation factor (Delgado 1982).

Despite the title and the intent of the rural/isolation factor (Swift 1978), its qualification as a geographical isolation factor is doubtful because it applies only to a district which must have a minimum enrollment of ten thousand students, as opposed to the more common delineation of a maximum size for qualification. In addition, the isolation criterion, ratio of average daily membership (ADM) to the number of senior high schools, does not contain a direct geographical base. A more recent action disqualifies those high schools which have an ADM of four hundred or less from participation in this aid adjustment and provides for adjustment units for those high schools based solely on size (Delgado 1982).

New Mexico did, at one time, have legislation that contained a geographical isolation factor based on state-determined isolation (National Commission on School District Reorganization 1948).

Pennsylvania. The Pennsylvania Public School Code of 1949 authorized sparsity factor payments which "are special payments to school districts that are sparsely populated and which as a result have special needs" (Pennsylvania Department of Education 1977, p. 31). This "sparsity" factor is a geographical isolation factor rather than a simple sparsity factor which relies on size alone. Criteria for receiving aid as a sparsity district are two-fold.

1. Sparsity Factor

   A sparsity factor shall be assigned for those school districts that have a population density of less than 50 per square mile, as determined by the Secretary of Education from the most recent records of the United States Census Bureau.

2. Modified Sparsity

   School districts that have a population density of at least 50 per square mile but less than 100 per square mile, as determined by the Secretary of Education from the most recent records of the Census Bureau, shall qualify for a modified sparsity payment (Pennsylvania, Department of Education 1977, p. 30).

Figure 2 contains the computational formulas that may be used in determining a district's additional revenue for sparsity. A district may choose the most beneficial formula. The Pennsylvania legislation guarantees sparsity revenue of $30 for each weighted pupil unit in an eligible district. This amount is calculated by the formula designated Computation 3. If a sparsity

Computation 1:

AIE/WADM - $400 (maximum excess $250) x MV/PI AR x SWADM

Computation 2:

AIE/WADM - $400 (maximum excess $250) x .375 x SWADM

Computation 3:

SWADM x $30

AIE/WADM = Actual instructional expenditure per weighted
AIE/WADM = average daily membership

MV/PI AR = Market value to personal income aid ratio

SWADM = Subsidy-weighted average daily membership

Fig. 2. Three alternate formulas for computing revenue entitlement for the Pennsylvania sparsity factor.

district spends more than $480 per weighted pupil unit, it is eligible for revenue in excess of $30 per unit by using Computation 2. If a sparsity district's ratio of property market value to personal income exceeds .375, the district may be entitled to an even larger amount of revenue by using Computation 1. Modified spasity revenue is calculated by using the formulas with the addition of a factor which reduces the revenue entitlement in proportion to the increased population per square mile (Pennsylvania, Department of Education 1977). During the 1978-79 school year, seventy districts received sparsity aid and seventy-five additional districts received modified sparsity aid. There were 505 school districts in Pennsylvania during that year. Total payments for sparsity and modified sparsity were $25,404,890 and $20,504,641 respectively (Pennsylvania, Department of Education 1979).

Texas. At various times since 1969, Texas legislation has contained geographical isolation factors which had distance, density, and state determination as isolation criteria (Texas 1969, 1975, 1979). Current legislation primarily uses a density criterion (area of the district in square miles) but also provides a guaranteee for small districts that may be applied on the basis of distance.

> The personnel unit allotment for a school district which contains at least 300 square miles and which has not more than 1,000 students in daily attendance in its education program shall be adjusted according to the following formula:
>
> $$1 + (1{,}000 - ADA)\ (.000455) \times PU = APU$$
>
> where PU is the district's personnel units . . . and APU is the district's adjusted personnel units.
>
> . . . . . .
>
> . . . a school district that has 1,000 or fewer students in average daily attendance shall be allotted not less than 12 personnel units if it offers a kindergarten through grade 12 program and has a prior year's average daily attendance of at least 90 students or is 30 miles or more by bus route from the nearest high school district (Texas 1979, sec. 16.102).

Texas foundation program funds are distributed through use of a personnel unit system which is based on average daily attendance (ADA) (Tron 1976). Table 1 contains the allotment system for these personnel units (Texas 1979). Districts with less than one thousand students may have the

TABLE 1

TEXAS FOUNDATION PROGRAM PERSONNEL UNIT ALLOTMENT*

Grade Level	No. ADA per Unit
K	18.5
1 - 3	18.5
4 - 6	21.0
7 - 9	20.0
10 - 12	18.0

*Table constructed with data from Texas 1979.

allotted personnel units adjusted. Geographically isolated school districts, those which contain more than three hundred square miles, receive an additional allotment calculated by multiplying the normal allotment by .000455. Schools with fewer than one thousand students and areas of less than three hundred square miles use a factor of .0003 (Texas 1979).

The distance factor, thirty miles or more, allows geographically isolated high schools with average daily attendance of less than ninety students to qualify for a minimum guaranteed number of personnel units. This same legislation also provided guarantees for schools operated only for kindergarten through grade six or kindergarten through grade eight (Texas 1979).

During the 1977-78 school year, 129 of the 1,134 school districts in Texas qualified for additional revenue as geographically isolated school districts. These districts received 542 additional personnel units. This aid amounted to 0.4 percent of the total personnel units allocated in the state in 1977-78 (Patton 1979; Texas, Education Agency 1979).

Distance

In determining geographically isolated school districts, six states include an isolation criterion based on distrance or travel time to another

school or school district. These states are Colorado, Florida, Minnesota, Montana, Oregon, and South Dakota. Data from Colorado and Montana are from the 1980 survey as representatives from those states did not respond to the 1982 survey. Florida and Minnesota legislation also includes provisions for the use of a formula in determining geographical isolation. Both of these states use the distance criterion for unusual and limited circumstances.

Colorado. Colorado legislation has provided additional state support for "small attendance centers"— those elementary schools which have fewer than 150 pupils and those secondary schools which have fewer than 175 pupils and which are twenty or more miles from any similar school. State aid in Colorado is provided on the basis of weighted pupil units, the total of which is known as "attendance entitlement." The number of pupil units allowed for small attendance centers are shown in Table 2. The number of

TABLE 2

CALCULATION OF ATTENDANCE ENTITLEMENT FOR COLORADO SMALL ATTENDANCE CENTERS*

Elementary Schools			Secondary Schools		
Attendance Entitlement-- Actual Enrollment	Factor (x)	Maximum Attendance Entitlement Allowed	Attendance Entitlement-- Actual Enrollment	Factor (x)	Maximum Attendance Entitlement Allowed
0.0 - 20	Allow 24	24	0.0 - 25	2.0	40
20.1 - 50	1.20	55	25.1 - 50	1.6	75
50.1 - 80	1.10	84	50.1 - 75	1.5	105
80.1 - 115	1.05	120	75.1 - 125	1.4	150
115.1 - 150	1.04	150	125.1 - 150	1.2	165
			150.1 - 175	1.1	175

*Table constructed with data from Colorado 1979.

pupil units provided from the geographical isolation factor may be determined by subtracting the actual enrollment from the maximum entitlement allowed. In addition, small attendance centers receive an additional amount of revenues which is calculated by multiplying a dollar value (twenty dollars in 1976) by the number of mills levied for the general fund of the district (Colorado 1979, sec. 22-50-113).

Small attendance centers receive from the state for each bonus pupil "the lesser of: (1) a district's revenue base for the pertinent year, or (2) the general fund mill levy multiplied by the state guarantee for the pertinent year" (Turpin 1978, p. 15). "An authorized revenue base is the previous year's per pupil amount received from state equalization and local property taxes assuming 100% collection" (Tron 1976, p. 64). In 1978, Colorado school districts had authorized per-pupil revenue bases ranging from $1,139.17 to $3,229.79. The state guarantee for 1978 was thirty-five dollars per pupil per mill. In 1977, eighty-seven of the 181 Colorado school districts had small attendance centers within the district. Those districts received $3,168,529 for 2,748.5 bonus pupils. The 1977 small attendance center entitlements ranged from $3,059.53 to $71,682.11 per district (Turpin 1978).

Florida. In 1981, Florida became the sixth state to provide for a geographical isolation factor with distance used as the isolation criterion.

> Districts which levy the maximum nonvoted discretionary millage . . . may calculate full-time equivalent students for small, isolated high schools by multiplying the number of unweighted full-time equivalent students times 2.75; . . . . For the purpose of this section, "small, isolated high school" means any high school which is located no less than 28 miles by the shortest route from another high school; which has been serving students primarily in basic studies . . . ; and which has a membership of no more than 100 students, but no fewer than 28 students, in grades 9 through 12 (Florida 1981, ch.236).

During the 1981-82 school year, there were no high schools in Florida which were designated as small, isolated high schools. However, there are two schools which are possibly eligible for such funding for the 1982-83 school year (Brewton 1982).

Minnesota. The 1979 Minnesota legislation that provided for the use of a formula for determining geographical isolation also contained a provision for designation of "isolated elementary schools."

> Any school district operating an elementary school, . . . which enrolls fewer than 20 pupils, and which is at least 50 miles by the usual traveled routes from the nearest other Minnesota elementary school, shall receive an amount equal to the foundation aid formula allowance times the number of pupils enrolled in that school in addition to all other aids the district is entitled to . . . (Minnesota 1979, Ch. 124, sec. 224).

Only one district qualified for the isolated elementary school aid during the 1979-80 school year (Melcher 1982).

Montana. The geographical isolation factor contained in Montana law, in effect since 1947, uses a size criterion which limits its application to elementary schools of less than ten average number of pupils belonging (ANB) and to secondary schools of less than twenty-five ANB.

> School Isolation. (1) The trustees of any district operating an elementary school of less than 10 ANB or a high school of less than 25 ANB shall annually apply to have the school classified as an isolated school. . . . Such application shall include:
>
> . . . . . .
>
> (b) a description of conditions affecting transportation such as poor roads, mountains, rivers, or other obstacles to travel, the distance the school is from the nearest open school having room and facilities for the pupils of such school, or any other condition that would result in an unusual hardship to the pupils of the school if they were transported to another school;
>
> . . . . . .
>
> No elementary or high school shall be considered an isolated school until the approval of the superintendent of public instruction has been received (Montana 1979, sec. 20-9-302).

In granting approval for the designation of an isolated school, the superintendent of public instruction uses a distance criterion.

> An applicant school cannot be approved as isolated if another operating school(s) with room to accomodate applicant's students exists within a distance of 20 road miles from applicant school and if 50 percent or more of the students from the applicant school can, under average

conditions, be transported to the closest operating school(s) in a period of one hour or less (Colburg 1974).

The source, but not the amount, of revenues is different for isolated and non-isolated schools.

> The Foundation Program (minimum amount required to be budgeted for the General Fund) is the same for isolated and non-isolated schools, but only half of the non-isolated schools Foundation Program is financed by the regular proportions of county and state equalization aid, leaving half to be financed by a district levy. (No district levy is required for the Foundation Program of an isolated school.) (Montana, Office of Public Instruction 1973, topic 7, p. 4)

During the 1978-79 school year, forty-six of Montana's sixty elementary schools with ANB of less than ten were identified as isolated. There were no Montana high schools with ANB less than twenty-five (Colburg 1980). Montana had a total of 614 school districts in 1978-79 (Grant and Lind 1979).

Oregon. Since 1957, Oregon has provided a "small school correction" in the distribution system for the Basic School Support Fund.

> A school may qualify for a small school correction if the average daily membership in grades one through eight or in grades 9 through 12 is below 100 . . . no elementary school shall qualify if it is within 10 miles by the nearest traveled road from another elementary school and no high school shall be considered if it is located within 15 miles by the nearest traveled road from another high school.
> . . . . . .
> The amount of the small school correction shall be adjusted annually by the State Board of Education in a manner consistent with the change in the basic education program level (Oregon 1979b, sec. 327.075).

Figure 3 contains the two formulas which the state board has approved for computing the small school correction (Oregon 1979a, rule 581-23-015).

The small school correction may allow a school to receive a higher basic grant from the state by raising the maximum qualifying limit for the school. The actual amount of such increase, if any, is determined by formulas and by the district's net operating expenditures. Of the 210 small schools in the state of Oregon in 1977-78, fifty-nine schools received the

Small school correction for grades 1-8:

$$\frac{(\text{Limit} \times 100)}{4} \times \text{No. of teachers}$$

Small school correction for grades 9-12:

$$\frac{(\text{Limit} \times 100)}{5} \times \text{No. of teachers}$$

$$\text{Limit} = \frac{\text{Statewide ave. of dists. total net oper. xpenditures}}{\text{State total estimated residen}^{+} \quad 1}$$

Fig. 3. Oregon small school correction formulas.

small school correction and twenty-one of those schools actually received additional revenues. Those revenues amounted to $149,341.43 (Oregon, Department of Education 1979a). During the 1979-80 school year, seventy-three schools qualified for the small school correction. Those schools were located in fifty-seven of the state's 333 districts (Oregon, Department of Education 1978a, 1979b).

South Dakota. Under the current South Dakota foundation program, public schools are classified through a geographical isolation factor based on distance.

> In order to be eligible to receive general support foundation program funds as herein provided, a school district must not have operated a one-teacher rural school during the second preceding school fiscal year with an average daily membership of five or less pupils within five miles by publicly traveled roads of any other public elementary school . . . (South Dakota 1981, sec. 13-13-15).
>
> In order to be eligible to receive general support foundation program funds as herein provided, a school district must not have operated a secondary school during the second preceding school fiscal year with an average daily membership of less than thirty-five pupils enrolled in grades nine through twelve in such school; unless such secondary school was located over twenty miles from any other public secondary school in operation; . . . (South Dakota 1981, sec. 13-13-16).

This geographical isolation factor in South Dakota's foundation program provides a means of disqualifying a district which operates a small school that does not meet the distance requirement, but it does not provide any distinct classification or additional revenues to those small schools that do meet the distance criterion. For the 1982-83 school year, one school in South Dakota will be disqualified from participation in the foundation program due to these provisions.

In 1979, the South Dakota legislature enacted legislation which included a geographical isolation factor which used population density as the isolation criterion.

> A school district with a density of less than 1.25 resident pupils in average daily membership per square mile as determined by the division of elementary and secondary education shall be entitled to additional pupil units for sparsity computed by multiplying the number of pupils in average daily membership times the pupil weighting . . . (South Dakota 1979, sec. 13-13-22).

The pupil weighting under this provision would have ranged from .04 to .01 pupil unit per student (ADM) depending on the actual density (Kosters 1979). This legislation was to have taken effect on 1 July 1982. However, the provisions of section 13-13-22 were subsequently removed by the legislature and did not take effect (Schlueter 1982).

State Determination

State determination is the most prevalent type of isolation criterion used by states in geographical isolation factors. The mechanism for determining geographical isolation and the factors used in such determination are controlled by state agencies and may include a single general criterion or a variety of criteria any of which may allow the designation of geographically isolated. The eight states which use state determination are Alaska, Arkansas, Georgia, Maine, North Carolina, Utah, and Washington. The 1982 survey data are included in the review of all of these states' legislation with the sole exception of Alaska.

Alaska. State law in Alaska has provided for a geographical isolation factor since 1970 (Alaska 1979). According to a letter from MacKinnon (1979), the most recent legislation provided that "area differentials are created for

districts that are remote, and which cost more money to operate because of remoteness." These are differentials were determined by the state legislature.

Alaska school districts are funded on the basis of instructional unit allotments which are determined by the type of school, the enrollment of the school, and the type(s) of special program(s) provided by the school. The area differentials increase the instructional unit allotments for remote districts by a percentage set by the legislature. The more remote a district, the greater the percentage of additional aid. Three districts did not qualify for any additional aid as remote districts in 1979-80. The remaining forty-nine districts received remote area differentials which provided from 104 to 155 percent of the instructional unit allotment. Seventeen school districts received the maximum percentage of additional aid as remote districts (Alaska 1979).

The amount allotted for the base instruction unit for the 1979-80 school year was $31,900. The additional aid for remote districts was $1,276 - $17,545 per instruction unit. Another provision in the Alaska legislation allows small remote districts to establish secondary schools with the approval of the state education commissioner. These schools are allowed three instructional units for enrollments under twelve ADM, four units for enrollments of twelve to twenty ADM, and five units for twenty-one to thirty-two students in ADM (Alaska 1979, Ch. 17, art. 1).

Arkansas. The state of Arkansas has had since 1957 a limited geographical isolation factor which uses a method of state determination as the isolation criterion (Venters 1980).

> The State Board of Education shall have authority to designate, on an annual basis, any district, or school within a district, which in its judgment is so isolated as to make its consolidation, or operation if it is a school within a district, with another district, in keeping with this Act, impossible and unwise. . . . The State Board of Education may provide supplemental funds from the Minimum Foundation Program or comparable fund to such isolated districts or schools. . . . No district or school designated as isolated shall receive additional funds sufficient to pay more than four additional teachers, using the local district salary schedule.

> The purpose of these funds shall be to improve the quality of the educational program in said districts, and the judgment of the State Board of Education shall be final. The Board may not, however, designate more than a total of seven isolated district and/or schools in any one year (Arkansas 1979, sec. 5).

During the 1980-81 school year, four of the state's 385 districts were designated as isolated. Data regarding the amount of revenues allotted to these districts were not available to the writer (Venters 1980).

Georgia. The Georgia State Board of Education was given authority to identify and supply additional aid to isolated schools in that state.

> The State Board of Education shall annually allot additional teachers and . . . additional funds . . . as may be necessary to assist local units in operating elementary and secondary schools which are, pursuant to provisions of this section and regulations and standards prescribed by the State Board, classified as being "isolated schools" an adequate program of education essentially comparable to that provided pupils attending public schools (Georgia 1979, sec. 32-625a.1).

The legislation also gave the Board authority to set standards for the identification of isolated schools.

> . . . an "isolated school" shall mean an elementary or secondary public school which meets such standards or characteristics of isolation as shall be prescribed from time to time by the State Board of Education based upon consideration of factors such as size of the school, school population density, surrounding road conditions to include distance by the nearest passable road to another appropriate school, time required for transporting such pupils to another appropriate school, climactic and geographical conditions, and such other similar factors as the Board, in its discretion, find relevant . . . (Georgia 1979, sec. 32-625a.1).

In June of 1975, the State Board of Education adopted three alternative means of identifying isolated schools. Two alternatives deal with enrollment and accreditation standards. Only one of the alternatives meets the criteria of a geographical isolation factor.

> 1a. A junior high or secondary school must earn fewer than 10 state-supported teachers.
>
> or
>
> b. An elementary school must earn fewer than one state-allotted teacher for each grade taught and must have fewer than six teachers.

2a. The school is more than 40 miles by the nearest possible road from another public elementary or secondary school within the same system.

or

b. Another public elementary or secondary school is within the 40 miles limit, but a majority of the pupils must travel more than 1 ½ hours to reach that other school.

or

c. The school is physically blocked by water, mountains, or climactic conditions from access to another public elementary or secondary school for at least 20 days during the school year (Georgia, State Board of Education 1975, policy 40-2810).

During the 1978-79 school year, schools in five of Georgia's 188 school districts were classified as isolated schools. These five schools received thirteen additional instructional positions which varied in value from district to district (Adamson 1978). The geographical isolation factor has been included in the Georgia education legislation since 1975 (Georgia 1979).

Idaho. Idaho legislation has included a geographical isolation factor since 1963 (Idaho 1979). The current legislation allows the trustees of a school district to petition the state board of education for designation of a school as a remote and necessary school.

3. Remote Schools. — The board of trustees of any Idaho school district which operates and maintains a school which is remote and isolated from the other schools of the state because of geographical or topographical conditions may petition the state board of education to recognize and approve the school as s remote and necessary school. . . . Schools which the state board of education approves as being necessary and remote shall be allowed adequate funding within the support program for an acceptable educational program for the students of the school. In the case of a remote and necessary secondary school, grades 7-12, the educational program shall be deemed acceptable when, in the opinion of the state board of education, the accreditation standard relating to staff size . . . has been met. The final determination of an acceptable program and adequate funding in the case of a remote and necessary elementary school shall be made by the state board of education (Idaho 1982, sec. 33-1003).

Another part of the same legislation allows for the designation of hardship elementary schools.

> b. Hardship Elementary School. -- Upon application of the board of trustees of a school district, the state board of education is empowered to determine that a given elementary school or elementary schools within the school district, not otherwise qualifying, are entitled to be counted as a separate elementary school . . . when, in the discretion of the state board of education, special conditions exist warranting the retention of the school as a separate attendance unit and the retention results in a substantial increase in cost per pupil in average daily attendance above the average cost per pupil in average daily attendance of the remainder of the district's elementary grade school pupils (Idaho 1982, sec. 33-1003).

Since 1980, Idaho school districts have received revenue through a distribution formula which uses support units. Hardship elementary schools can receive additional revenue because they are counted as separate schools, distinct from the total district elementary enrollment. Since the distribution formula allots a higher ratio of support units as enrollment becomes smaller, such designation results in a larger number of support units allotted.

Data regarding the number of schools identified through these two legislative provisions and the additional revenue provided to those schools were unavailable since revenues are calculated in summary form and were not available for more detailed analysis (Bishop 1982).

Maine. "Geographic isolation" is determined for public schools in Maine by the Commissioner of Education with the approval of the State Board of Education. Such classification has been given since 1973 "if a unit operates a school which is located an unreasonable long distance from another school facility or is situated in a location which has unique problems in transporting students to another school unit" (Maine 1981, Ch. 515, sec. 4749). The same legislation states that "the Commissioner shall adjust the elementary and secondary per pupil allocation to that unit to meet the educational needs of that unit."

The designation of geographic isolation and the financial impact of such designation have expanded considerably in recent years. Four schools, all located on offshore islands, were declared to be geographically isolated

for the 1979-80 school year. Enrollments in those schools ranged from four to twenty students. The additional allocation of revenue to those four schools totaled $33,984.85 (Fish 1980). For the 1981-82 school year, eleven schools, nine located on offshore islands, were designated as geographically isolated. Those eleven schools, with enrollments of two to two hundred forty-three students, received $330,311.16 during the 1981-82 school year (Redmond 1982).

North Carolina. The North Carolina legislature since 1955 has given the State Board of Education authorization to allot additional funds to isolated schools (Daniel Jones 1979).

> The Board shall have power to provide for the enrichment and strengthening of educational opportunities for the children of the State, and when sufficient State funds are available to provide first for the allotment of such a number of teachers as to prevent the teacher load from being too great in any school, the Board is authorized in its discretion, to make an additional allotment of teaching personnel to county and city administrative units . . . (North Carolina 1978, sec. 115-11).

School boards in districts which are geographically isolated may direct the district superintendent to write to the state board detailing the reasons for such isolation. The board evaluates each "application" on its own merits and may allocate funds for additional teachers if the need is determined to be justified. In evaluating applications for isolation designation, the board considers data such as enrollment--which must be less than one hundred students--and location--which must prevent consolidation of the isolated district. For the 1979-80 school year, sixty-nine teaching positions were allotted under the authority of the board to twenty-three administrative units. Of the twenty-three administrative units, nine were isolated districts and the remainder were state or regional institutions which offered educational services (Jones 1980).

Utah. The Utah legislature authorized the State Board of Education to adopt criteria for identifying small "necessarily existent" schools.

> . . . the state board of education shall . . . classify particular schools in each district as necessarily existent small rural schools. . . . The state board of education shall adopt standards and regulations to govern the approval of such schools consistent with principles

> of efficiency and economy and which shall serve the purpose of eliminating schools where consolidation is feasible from participation in special school units.
>
> It is the intent of the legislature that the extra weighted pupil units provided for small schools shall ultimately be given only to such schools which because of their isolation must be regarded as necessarily existent. . . . (Utah 1981).

The board adopted a new set of standards for classifying small schools as necessarily existent in 1979. The statement of philosophy contained in that document noted that "the legislature . . . is insistent that extra subsidization of small schools be granted only to those schools that are necessarily existent in accordance with criteria and standards adopted by the State Board of Education" (Utah, State Board of Education 1979, p. 1). The board set down a number of different criteria which it could use in classifying necessarily existent small schools. Those criteria included travel time to neighboring schools, enrollment trends; condition of the school plant; requirements for capital expenditures in case of consolidation with neighboring schools; maximum enrollment; "substantial subjective evidence that consolidation may result in undesirable social, cultural, and economic changes in the community"; and the extent of cooperative activities with neighboring schools.

A school which is classified as necessarily existent receives revenue based on weighted pupil units. Table 3 contains the weighting factors which were included in the legislation dealing with necessarily existent small schools.

During the 1979-80 school year, twenty-six of Utah's forty school districts received additional revenues due to the operation of a necessarily existent small school within the district. Twenty-six high schools, six middle schools, four junior high schools, and an undetermined number of elementary schools were classified as necessarily existent during that year. Those schools received approximately five million dollars in state aid (Nelson 1980).

TABLE 3

UTAH WEIGHTING FACTORS FOR NECESSARILY EXISTENT SCHOOLS*

School Type	School Size (ADA)	No. of Weighted Pupil Units
Elementary	5.0 - 13	27
	13.1 - 21	40
	21.1 - 31	53
	31.1 - 51	53 + (1.4)(ADA - 30)
	51.1 - 91	81 + (1.2)(ADA - 50)
	91.1 - 111	129 + (1.0)(ADA - 90)
	111.1 - 165	149 + (0.3)(ADA - 110)
Junior High/ Middle School	0.0 - 41	(2.0)(ADA)
	41.1 - 81	80 + (1.5)(ADA - 40)
	81.1 - 151	140 + (1.4)(ADA - 80)
	151.1 - 251	238 + (1.0)(ADA - 150)
	251.1 - 350	338 + (0.12)(ADA - 250)
Senior High	0.0 - 76	(2.0)(ADA)
	76.1 - 126	150 + (1.6(ADA - 75)
	126.1 - 186	230 + (1.1)(ADA - 125)
	186.1 - 251	296 + (1.0)(ADA - 185)
	251.1 - 375	361 + (.112)(ADA - 250)

*Table constructed with data from Utah 1979.

Washington. The Washington legislature in 1965 enacted legislation recognizing "remote and necessary" schools for additional funding.

> To determine a "weighted student enrolled," . . . the superintendent of public instruction . . . shall provide appropriate recognition of the following costs . . . ;
> . . . . . .
> (3) Costs resulting from the operation of small districts judged by the state board of education as remote and necessary; . . . (Washington 1965, Ch. 154, sec. 3).

Subsequent revisions of the law changed the remote and necessary classification from small districts to small school plants within districts.

The state board has used as many as twelve different criteria in judging remote and necessary schools, including topography, road conditions, enrollment and projected growth, weather conditions, alternate facilities and programs, and travel time for students (Dunlap 1975).

Fourteen school plants within districts were recognized by the board as remote and necessary for the 1981-82 school year (McNurlin 1982). There were three hundred school districts in the state during that school year (Washington, Superintendent of Public Instruction, Management Information Services 1982).

Formula

There are only two states which have included a geographical isolation factor based on a formula in their legislation.

Florida. In 1975 Florida became the first state to enact legislation providing a geographical isolation factor based on a statistically-derived formula (Florida 1979). However, the factor has never been funded by the legislature and thus has had no impact on schools in the state (Brewton 1982). Johns (1975) developed the Florida formula as a regression equation developed from a mathematical function that considered two variables--extra cost and sparsity. Figure 4 contains the formula in its final form. The development of this formula was presented in detail by Johns (1975). By setting the minimum district sparsity index at one thousand, the sparsity factor--or predicted extra costs due to sparsity--will not provide an excessively high value. District sparsity indices exceeding 7,308 will yield no additional revenues for the district. The sparsity factor range is from .0000 to .1877.

$$\text{Sparsity Factor} = \frac{1101.8918}{2700 + \text{dist. sparsity index}} - 0.1101$$

$$\text{District Sparsity Index} = \frac{\text{Total no. of full-time equivalent stdts.}}{\text{No. of senior high schls, not to exceed 3}}$$

Fig. 4. Florida index of extra cost due to sparsity.

The revenues for geographical isolation, if provided by the legislature, would be calculated by multiplying the sparsity factor by the weighted pupils times the state appropriation per pupil (Johns 1975). Had the legislature funded the formula for the 1974-75 school year, forty-six of Florida's sixty-seven districts would have received a total of $14,709,598. The range of revenues per district would have been $54,224 - $704,678 (Johns 1975).

Minnesota. Minnesota is both the latest state to provide a geographical isolation factor and the only state to fund such a factor based on criteria defined by formulas. Although the enabling legislation identified the new factor as "sparsity aid," it is really a geographical isolation factor rather than a sparsity factor because it considers isolation as well as size. The Minnesota factor provides revenues on the basis of two formulas--one for the size criterion and one for the isolation criterion (Minnesota 1979, Ch. 124, sec. 224).

The size criterion formula (See Figure 5) provides aid in an inverse proportion to a district's secondary enrollment (measured in ADM). Districts whose total secondary enrollment exceeds five hundred are ineligible for such aid. The isolation criterion is established by the formula shown in Figure 6.

$$\text{Aid} = \$1{,}265 \times \text{ADM} \times \frac{500 - \text{ADM}}{500 + \text{ADM}}$$

ADM = District secondary student enrollment in average daily membership

Fig. 5. Minnesota size criterion formula.

$$\text{Isolation Index} = \text{Miles to nearest high school} + \sqrt{\frac{\text{Area}}{2}}$$

Miles to nearest high school is measured from the district's high school. Area is the total area of the district in square miles.

Fig. 6. Minnesota isolation criterion formula.

This formula uses both distance and area to determine isolation. The formula has been calculated to provide "an approximate measure of the distance which a district's students would have to travel from their homes to the nearest neighboring high school" (Minnesota, Department of Education 1979, p.2). The isolation index for Minnesota school districts varies from 2.9 to 82.6. Districts with an isolation index value less than eighteen receive no aid even if aid was indicated in the size criterion formula. Districts with isolation index values greater than eighteen receive a prorated share of the aid determined by the size criterion formula. This proration is determined by subtracting eighteen from the district's isolation index and then dividing the result by the isolation index. Districts with more than one high school use adapted formulas which, in effect, consider each high school attendance area as a separate district. During the 1981-82 school year, 104 of Minnesota's 437 school districts received sparsity aid (Melcher 1982).

In addition to these states which actually have geographical isolation factors included in current law, several other states, including Michigan and Illinois, had geographical isolation factors at one time but subsequently repealed such legislation (American Association of School Administrators, Commission on School District Reorganization 1958). Kentucky legislation, since repealed, allowed for state determination of isolated schools, which had enrollments of fewer than one hundred students, on the basis of "factors to include the distance by the nearest passable road from another appropriate school center . . . and the time for transportation necessary to attend another school; . . . (Kentucky 1978, sec. 157.320).

Examples of states which include one, but not both, of the two criteria for geographical isolation (size and isolation) are Indiana which includes an isolation criterion in the calculation of state transportation aid for schools (Riley 1979) and Wyoming which includes a size criterion in the state foundation program calculations (Fox 1979).

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